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environment

**The Provincial Role
In Municipal Solid Waste Management:
A Discussion Paper**



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ENVIRONMENT

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THE PROVINCIAL ROLE IN MUNICIPAL SOLID WASTE MANAGEMENT:

A DISCUSSION PAPER

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Planning and Assessment Branch
and
Waste Management Branch
Ministry of Environment



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FOREWORD
SOLID WASTES AND PUBLIC REVIEW

Effective management of municipal solid wastes is one of the biggest environmental challenges facing British Columbia. Within 10 years, 60 percent of the province's landfills will reach the end of their service life unless action is taken immediately to reduce the amount of waste discharges into these landfills.

The programs and policies we devise to meet the challenge could have a profound impact on our environment and related resource management and industrial development activities. These programs could also provide important economic benefits through the recycling of materials in the waste stream and the generation of energy and other fuels.

This paper is the first step toward finding the right solutions to our solid waste management problems. It is based on a survey of solid waste management methods currently undertaken by municipalities and regional districts and a review of assistance programs in other jurisdictions.

This paper contains important information about the management and disposal options currently available, and presents a number of municipal solid waste management proposals developed by the Ministry of Environment.

The paper examines all aspects of solid waste management: collection and disposal; recycling; beverage container and litter control; energy and resource recovery, and; funding of solid waste management programs.

It also includes a look at the extent of the problem in this province, and a review of approaches to solid waste management in other jurisdictions.

Most important, it is designed to serve as a focal point for public discussion of solid waste management strategy. The proposals presented do not represent Government's final decisions on a solid waste strategy but do show Government's commitment to developing an active approach for managing solid wastes.

The discussion paper will be circulated for comment to all Municipalities and Regional Districts in British Columbia, as well as to public interest groups and industry.

In addition, a provincial task force, chaired by James Rabbitt, MLA for Yale-Lillooet and Parliamentary Secretary to the Minister of Environment, will hold a series of public meetings across the province.

Discussion stimulated by this paper and the public meetings will help the Ministry of Environment to develop a solid waste strategy that will meet the present and future needs of British Columbians.

SECTION 1 INTRODUCTION

1.1 BACKGROUND

The recent and futile voyage of the garbage barge from Islip, New York through the Caribbean in search of a final resting place for its cargo dramatically brought to world attention the growing problem of municipal solid waste disposal.

In some parts of the world, the safe disposal of the mountains of garbage produced by households, business and industry has reached a crisis situation. For example, in a number of northeastern U.S. states, all existing landfills will likely be filled and closed within the next five to ten years. Some towns and cities in these areas already have to ship their garbage out of state where they have to pay a tipping fee of \$100/tonne (U.S. dollars) or more. In British Columbia, the current situation is nowhere as severe, but our waste problem is growing. Public confidence in the environmental safety and desirability of landfills has eroded, so there is increasing opposition to establishing new landfill sites. For example, both the Greater Vancouver and Nanaimo Regional Districts were unable to find a publicly acceptable location for a new landfill site within their own boundaries. While such current disposal problems are manageable, they must be tackled before a crisis situation develops. Both the Greater Vancouver and Capital Regional Districts have developed long-term plans for the management of their solid wastes. However a province-wide strategy is required if the problem is to be effectively tackled within the next five years.

1.2 PURPOSE OF THE REPORT

The purpose of this discussion paper is twofold. First, it reviews the options available to dispose of municipal solid wastes and manage the

current solid waste management situation in British Columbia. Second, it presents the Ministry of Environment's proposals to establish a provincial strategy to help municipalities and regional districts manage their solid waste disposal problems. The proposals reflect current Ministry thinking on how a provincial strategy should proceed, but stop short of finalized decisions. The input of the public and all interest groups on our proposals and on solid waste management problems is being sought before any final decisions are made. Readers should note that this paper deals with solid wastes only and not special wastes or air and water emissions.

1.3 MUNICIPAL SOLID WASTES IN BRITISH COLUMBIA

A recent study of municipal solid waste management in British Columbia estimated that 2,130,164 tonnes of solid waste were produced in 1986 (Stone, 1988). This translates to a per capita waste generation rate of 737 kg per year or 2.02 kg per day. The study defined municipal solid wastes as solid wastes from any source which enter either the collection or disposal systems operated by municipalities or regional districts in British Columbia. This definition excludes any wastes recycled prior to collection and any commercial/industrial wastes that are disposed of on site or at their own private disposal facility. For example, vast quantities of wood wastes are produced each year, but much is used as fuel or incinerated on site. The municipal solid waste estimates given above, then, must be treated as a conservative estimate of the total provincial solid waste problem.

Forecasts of the growth in municipal solid wastes are shown in Figure 1-1. These are based on population increases alone, assuming a constant per capita waste generation rate so any changes in the per capita generation rate, either up or down, could dramatically alter the forecasts. Such changes might include changes in consumer product packaging, per capita disposable income, and society's attitudes towards recycling. Assuming that these factors remain constant and only the population changes, there would be a 28 percent increase in annual municipal solid waste production over the 1986 level by the year 2006.

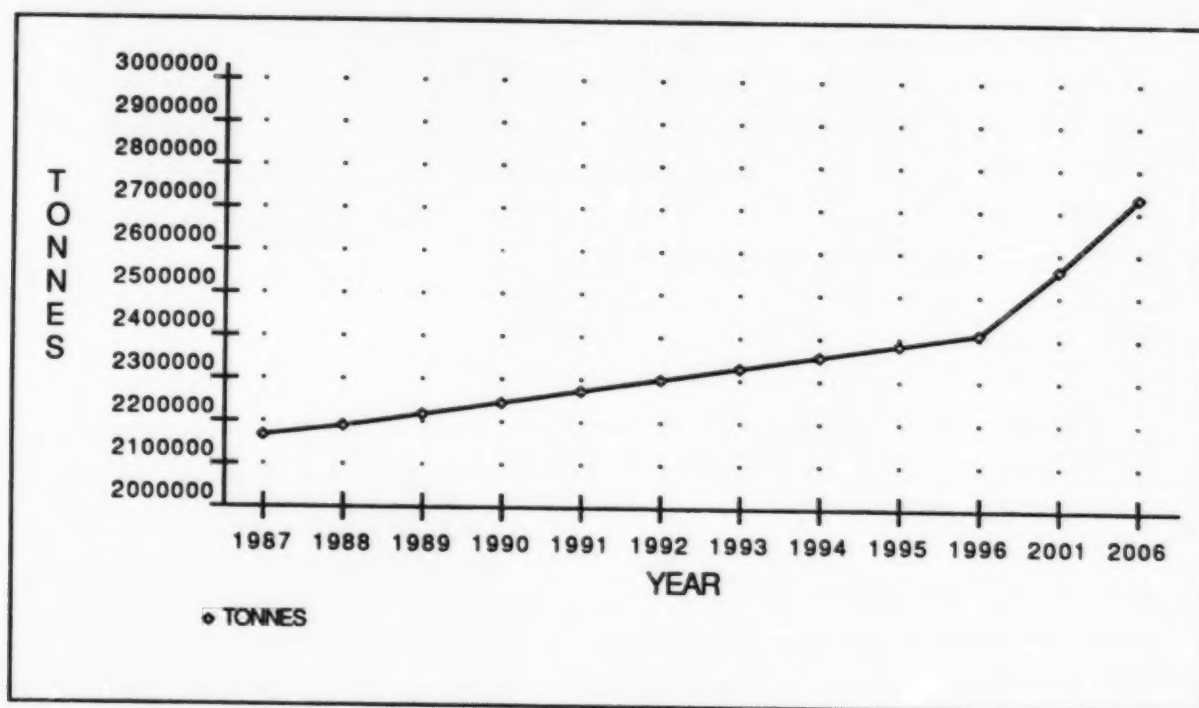


FIGURE 1-1
FORECASTED GROWTH IN MUNICIPAL SOLID WASTES

Waste Composition

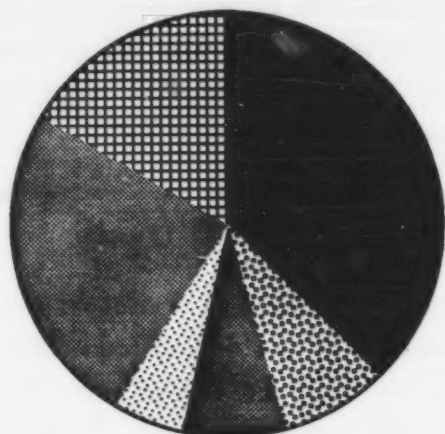
The current material composition of the municipal waste stream is not known. However a study of B.C. wastes in 1976 and a 1986 study for Washington State provides an approximation of the current situation (Bird and Hale Ltd. et al, 1979 and Matrix Management Group et al, 1987 respectively). Figure 1-2 gives the percentage breakdown of total solid wastes from the two studies by six material components. The results of the two studies are quite similar, however plastics had a much higher share of the waste stream in the Washington study. It is expected that with the continuing growth in the use of plastics in consumer products packaging that the current share of plastics in the B.C. waste stream will be similar to that shown in the Washington State study.

Waste Disposal

Almost all of the municipal solid wastes produced in 1986 were disposed of by landfill. Only seven municipal incinerators were in operation during 1986 processing less than one percent of the total waste stream. A few municipalities also compost a small amount of leaf refuse. This picture will change during 1988 with the opening of the Greater Vancouver Regional District's (GVRD) new mass burn incinerator in Burnaby and in the future by the opening of a resource recovery plant in Coquitlam. The Burnaby incinerator is planned to process 210,000 tonnes per year, or almost 10 percent of the total 1986 provincial solid waste production. The incinerator will also be the first one in B.C. to produce steam energy for sale to a private firm. The Coquitlam resource recovery plant will process 225,000 tonnes per year but only 10 percent to 50 percent of the throughput will be recoverable with the remainder going to landfill. However, even with these two projects the majority of solid wastes produced in B.C. will continue to be disposed of by landfill for the foreseeable future.

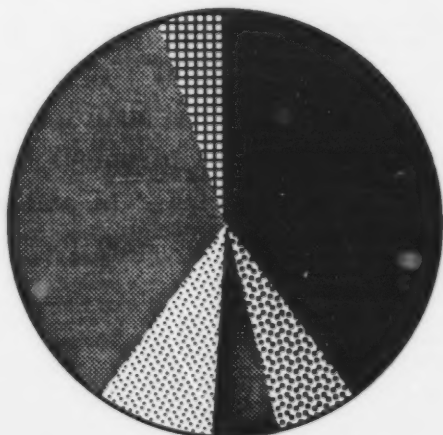
Currently there are 236 licenced landfill sites in British Columbia with a permitted disposal rate of 3,707 tonnes or 8,215 cubic meters per

BC 1976



■ PAPER	37.9%
▣ GLASS	7.8%
■ METALS	7.9%
▣ PLASTICS	5.4%
■ ORGANICS	24.7%
▣ OTHER	16.3%

WASHINGTON STATE 1986



■ PAPER	40.0%
▣ GLASS	6.0%
■ METALS	5.0%
▣ PLASTICS	9.0%
■ ORGANICS	35.0%
▣ OTHER	5.0%

FIGURE 1-2
MATERIAL COMPOSITION OF MUNICIPAL SOLID WASTES

day. Figure 1-3 shows a frequency distribution of the expected remaining service life of the landfills as reported on the permit applications. The figure shows the service life remaining along the side by year group and the percent and cumulative percent of total landfills in each year group along the bottom. As shown 60 percent of licenced landfill sites will reach the end of their expected service lives in the next ten years.

Recycling

There are community recycling operations in at least 31 municipalities and regional districts. These are aimed primarily at collecting household - source separated recyclable materials, 22 have drop-off depots, to which households bring their recyclable materials, and 14 have curbside collection. Firm data on the total quantity of recyclable material collected in B.C. do not exist, but the GVRD estimates that 27,000 tonnes of old newspaper are recycled annually from within its boundaries. Other materials, such as glass and ferrous and non-ferrous metals, are also collected. Most of these community recycling operations are private operators/societies which, in most cases receive minimal government support. Recycling activities have recently started up in the municipality of Delta and both the Capital and Greater Vancouver Regional Districts have announced plans to increase recycling within these communities. In smaller centres, recycling is not yet economically attractive without some form of financial support.

Municipal Solid Waste Management Costs

It's estimated that the total solid waste management cost to British Columbia's municipalities and regional districts during 1986 was \$52.6 million (Stone, 1988). Collection costs accounted for 61 percent of this total, with disposal costs accounting for 38 percent while the remaining one percent was devoted to recycling. On a per tonne basis the average collection cost was \$24.08, the average landfill cost was \$8.98 and the incineration costs varied between \$15.00 and \$37.30.

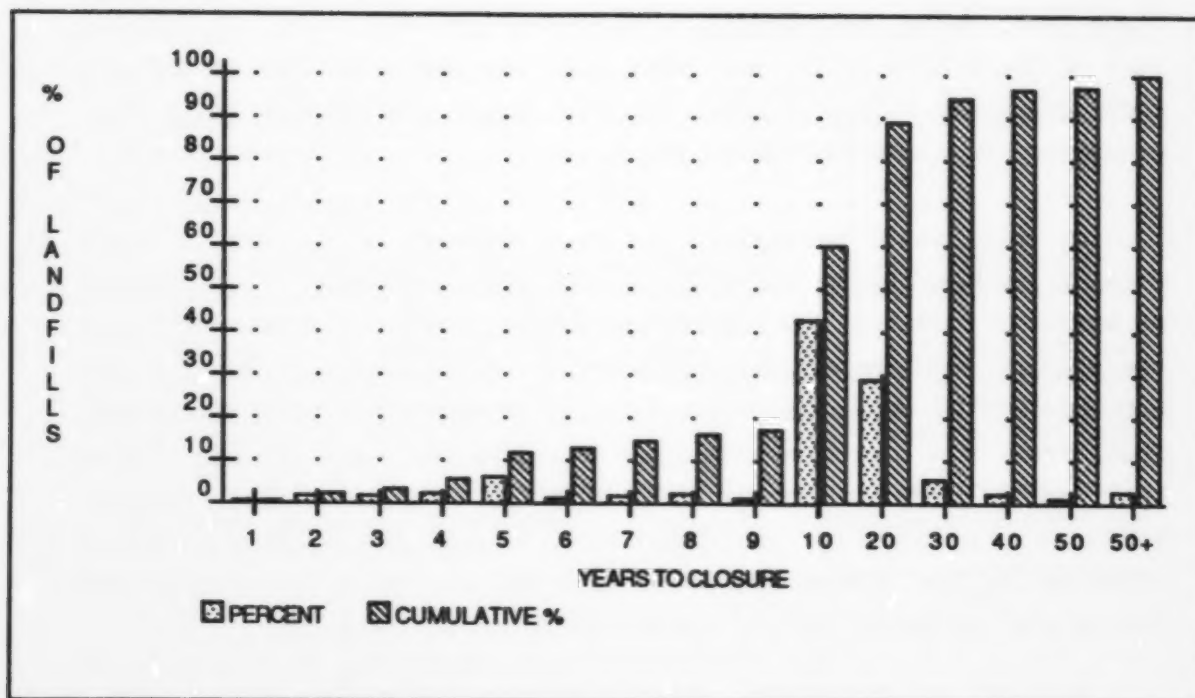


FIGURE 1-3
REMAINING SERVICE LIFE AT BRITISH COLUMBIA'S EXISTING LANDFILL SITES

Unfortunately, the average costs reported above can be misleading as most municipalities and regional districts do not have a full cost accounting system but report only their direct operating costs. For example, most of the municipalities sampled for their landfill costs did not include in their total disposal costs interest payments, gas collection and control costs, or closure and post-closure costs. The cost of closing and securing a landfill site can be substantial so the failure to account for these costs during the landfill's operating life will cause the reported cost of landfilling to be much lower than true cost. An accurate and full cost accounting system is vital to help ensure that correct solid waste management decisions are made in the future.

In solid waste management, a factor related to the cost of waste disposal services is the price charged for these services. If the disposal of wastes is funded by local government general revenue like property taxes, the disposal services are being provided to waste generators for free with the quantity of wastes disposed of having no bearing on what is charged. Thus, there is no incentive like a per unit disposal charge to either reduce their waste production or to find alternative waste disposal methods. Information collected on the tipping fees, if any, charged at 101 landfill sites during 1986 showed that 88 of them had no tipping fee at all. The fees at the remaining 13 sites ranged from \$1 to \$27 per tonne.

1.4 REVIEW OF MANAGEMENT OPTIONS

The following charts present the essential factors affecting the selection of each management option:

1. LANDFILL

Advantages

- usually the cheapest alternative
- accommodates any size community
- reliable and does not require a back-up facility
- simple to operate
- land can be reclaimed for community end-use
- compatible with other disposal alternatives
- can accept virtually all municipal type wastes
- potential for energy recovery from methane gas

Disadvantages

- not always socially acceptable
- odors and other nuisances require control
- leachate may require treatment
- gas generation may require control
- stabilization of fill is slow, denying post-development for long periods
- post-closure maintenance required for 20 years or more to protect environment
- not compatible with all land uses
- can create human conflict with scavenging wildlife

2. INCINERATION

- achieves considerable weight and volume reductions to save landfill space
- can be located in urban settings close to waste sources
- high temperature destruction most appropriate for some municipal organics
- potential for energy recovery as hot water, steam and electricity
- relatively small land area required
- useful in remote areas to mitigate wildlife conflicts
- social impacts are minimal

- relatively high net capital and operating costs even with energy recovery
- must have back-up facility for contingency and bulky non-combustibles
- requires competent operators because of increasingly sophisticated technology
- emission control requirements are becoming increasingly stringent and expensive
- ash residues are suspected of being environmentally hazardous
- long-term energy contracts are problematical
- some technologies are not fully proven

3. RESOURCE RECOVERY (Composting, material recovery, fuel production)

Advantages

- socially acceptable option
- capable of handling up to 90 percent of waste stream
- potential for revenue generation
- minimal environmental impact
- opportunity for employment creation usually in low skilled categories
- reasonably compatible with urban land uses
- well-proven technologies

Disadvantages

- high unit cost
- requires back-up disposal of residuals
- viability dependent on long-term market demand within restricted distance
- processing of wastes can be hazardous and reliability significantly reduced
- possibility of job loss in primary industries
- not viable for small communities or for areas remote from markets
- poor track record as long-term option

4. RECYCLING (Pre-disposal recovery)

- socially acceptable option
- limited portion of waste stream handled
- conservation of finite resources and energy
- secondary benefits of waste reduction from public conservation attitudes
- pollution abatement from use of secondary material in manufacturing
- provides revenue and new employment potential
- high collection and/or marketing costs
- disposal requirements for residuals virtually unaffected
- could impact on primary industries
- dependent on relatively high participation rates
- stability dependent on balance of market supply and demand
- requires subsidy in addition to disposal facility costs

1.5 SUMMARY

2.13 million tonnes of municipal solid wastes are produced in British Columbia every year and this annual rate is expected to increase 28 percent over the next two decades;

landfilling is the major disposal method currently used in British Columbia;

60 percent of existing landfill sites are scheduled to reach the end of their service life over the next ten years;

inadequate cost accounting of waste disposal may bias the selection of a waste disposal method towards landfilling;

our waste disposal problems are growing and must be tackled now before any crisis situations develop.

SECTION 2

RECYCLING

2.1 INTRODUCTION

Recycling operations are by no means a new phenomenon; instead many, such as scrap metal operators, have been in existence for centuries. Metals, due to their relatively high value by volume, have long been a profitable recyclable material. However, the recycling of post-consumer wastes has been a relatively recent event growing out of the conservation movement of the late 60s and early 70s. In most cases, these new recycling operations were private operations receiving little or no government support. Many of these operations failed due to the relatively low value by weight of the recycled materials and to the relatively labour intensive nature of the operations. Also, due to low public participation, relatively small quantities of material were diverted from the post-consumer waste stream.

The landfill capacity crisis that hit the northeast U.S. and other areas in the early 80s has changed this picture. The recycling of municipal solid waste is no longer viewed by solid waste managers as a profit making enterprise but rather as a potential waste disposal method. If the net cost of recycling, i.e. collection costs minus the price of the collected materials, is less than the alternative disposal method, for example landfilling, then it is an economically desirable disposal alternative. In light of this, many governments have moved to set up programs which support the establishment and operation of community recycling programs. Indeed, in the U.S. northeast, many states have made recycling mandatory.

The remainder of this section will focus on source separation recycling operations only. Source separation recycling operations are ones where the recyclable materials are separated from the municipal solid wastes before

the wastes are collected for disposal. Support for operations which separate materials from the municipal solid waste stream after collection will be considered in Section 5 - Energy and Resource Recovery. The large majority of source separation operations are directed at households. Under these operations, households separate recyclable material, usually newsprint, glass and metal cans, from their household wastes and store them in a separate container. Usually, in urban areas, the recyclable materials are collected from the households at the curbside whereas rural programs have the households drop off the materials at depots. Increasingly, source separation programs are also being aimed at the business sector -- for example, the collection of high grade paper from office buildings and the collection of waste lubricating oils from service stations.

2.2 EXAMPLES OF RECYCLING PROGRAMS IN OTHER JURISDICTIONS

The recycling programs implemented by provincial and state governments in Canada and the U.S. vary from quite modest financial assistance of voluntary community operations to massive funding of mandatory municipal recycling. The degree of assistance is usually directly related to the severity of the local waste disposal problem. For example, in Alberta the resource recovery grant program had a total of \$150,000 available in 1986 to assist community recyclers with capital equipment purchases, while in Ontario \$4 million was made available in 1987/88 with a further \$5 million being provided by the private sector to assist recycling. The Ontario program, in addition to capital equipment grants, also provides cost-shared planning and operating grants plus full funding of household containers. In the U.S. northeast, the states of New Jersey, Rhode Island and Connecticut have made it mandatory for all municipalities to start recycling programs with the goal of recycling 15 percent to 25 percent of the total waste stream within one to three years of start-up. In Rhode Island, the state assists municipalities by providing total funding of a recycling operation for its first three years of operation, after which the municipalities assume full financial responsibility. In the northeastern states which do not have mandatory programs, many municipalities have, on their own

initiatives passed local mandatory recycling ordinances. The usual enforcement mechanism involves not picking up the garbage unless household- source separated recyclables are also set out for garbage pick-up.

While the emphasis in most jurisdictions has been on household source separation recycling programs, the potential for commercial source separation recycling is receiving increasing attention. Commercial recycling has the potential advantage of being able to produce large quantities of a relatively homogenous waste product. For example, many departments of governments at the federal, provincial, state and municipal level, as well as some businesses and institutions, run office waste paper source separation programs. The collection of glass containers from restaurants and bars is another example of commercial recycling.

Information plays a key role in recycling, especially for commercial/ industrial recycling. Many producers can use the waste products of other firms as a raw material but don't know who generates the wastes. Similarly, waste generators may not know that their wastes are valuable to someone else. Households, too, may have recyclable materials but not know where to take them. To fill this information void, many jurisdictions have implemented recycling hot-lines and waste exchanges. The hot-lines are toll free numbers which people can phone to get information on what materials are recycled and who collects them. Waste exchanges are bulletins with listings of industrial waste materials available and wanted.

In an attempt to conserve dwindling landfill space, several U.S. states have banned leaf and yard wastes from all state landfills and have directed municipalities to implement leaf composting programs. The history of composting mixed municipal solid wastes has generally been one of failure, however, this has not been true for leaf composting. Leaf composting has proven to be a low-tech and relatively low cost method of disposal, and yielding a composted product that has a ready market.

2.3 RECYCLING PROGRAM PROPOSALS

The Ministry recognizes that a number of municipalities have initiated curbside recycling programs since 1986. Examples include Delta together with proposals being actively promoted by the Capital and Greater Vancouver Regional Districts. Clearly the time has come for recycling activities in a number of major municipalities. However, the Ministry feels that additional assistance is required to reach a target of 50 percent of households being covered by recycling programs over the next five years.

After a review of the current provincial solid waste management situation and of the programs used in other jurisdictions, the Ministry has developed six proposals directed at assisting the recycling of wastes and the composting of leaf and yard wastes. The Ministry believes that recycling, properly implemented, can offer great benefits to communities by reducing the municipal waste stream by upwards of 25 percent. The composting of leaf and yard wastes has the potential, in certain areas, to reduce the waste stream by a further 10 percent. Not all of the proposals listed below will necessarily be implemented and public comment on their usefulness and effectiveness is being sought.

PROPOSAL 1 - MUNICIPAL RECYCLING ASSISTANCE GRANTS

The Ministry proposes a municipal recycling grant program be established to support household and commercial source separation operations as well as the collection and composting of leaf and yard refuse. The program would award monies in two stages:

Stage 1 - Solid Waste Planning Grant

The funds from this stage would be used to assess which materials to collect, the method of collection, the markets available for the materials collected, the alternative costs of waste disposal and the cost effectiveness of the program. The cost effectiveness of the proposed recycling operation would be judged by comparison to the alternative waste disposal

methods available and not as a profit making venture. The planning grant would be \$5,000 plus 50 percent of the next \$10,000 in study costs, for a maximum grant of \$10,000 per applicant.

Stage 2 - Recycling Capital Grant

Capital grants for a recycling operation would be awarded only if the proposed operation has clearly been shown to be cost effective with suitable markets for the materials to be collected. The latter requirement is vital in order to ensure that any materials collected are actually diverted from the waste stream and not dumped on a weak or nonexistent market. In order to qualify for the capital grants, the municipality must set a minimum tipping fee at all of its solid waste disposal facilities at least equal to the average total cost of operation as identified in the planning grant stage. Items for grant support for approved projects include household containers for curbside pickup programs, and initial promotion and education campaign expenses.

PROPOSAL 2 - COMMERCIAL RECYCLING DEMONSTRATION PROJECT

The headquarters section of the Waste Management Branch currently runs the Paper-Save Program, an office waste paper source separation program. The Ministry proposes to expand the Paper-Save Program throughout all Ministry offices in the Victoria area as a demonstration commercial source separation program. If it proves feasible, the program will eventually expand throughout all Ministry offices in the province.

PROPOSAL 3 - COMMERCIAL RECYCLING ASSISTANCE PROGRAM

The Ministry recognizes the great potential for waste reduction by the establishment of commercial source separation recycling programs. For example, office workers generate between 0.6 and 1.0 kilograms (1.3 - 2.2

pounds) of waste paper per person per working day, almost all of which is recyclable (U.S. E.P.A., 1977). The Ministry proposes to establish a commercial/ industrial source separation assistance program. Under this program, Ministry staff would, on the request of a business or institution, undertake a feasibility study of an office paper or other material source separation operation. In addition, for office paper programs, the Ministry would fund a portion of the cost of desk top paper containers if the program was considered cost effective.

PROPOSAL 4 - RECYCLING HOT LINE AND WASTE EXCHANGE

In many cases, one person's wastes are another person's raw materials and all that is needed to get the wastes out of the waste stream is to bring the two parties together. Thus, information on what's available and what's wanted has a critical role. The GVRD runs a recycling hotline which provides callers with information on what materials are collected and who the nearest collector is within the GVRD. In addition, the Recycling Council of British Columbia (RCBC) produces a waste materials exchange bulletin which lists waste materials wanted and available in British Columbia. Both of these programs currently function without any provincial support. The Ministry proposes to provide 50 percent funding up to a maximum of \$20,000 per annum to expand the GVRD's recycling hotline to cover the entire province with the use of a toll free 800 telephone number. The Ministry supports the concept of a provincial waste materials exchange and is currently conducting a study of the most effective method of implementing waste exchanges for the Canadian Council of Resource and Environment Ministers. The Ministry proposes to provide interim assistance for RCBC's waste materials exchange, by providing 50 percent funding up to a maximum of \$5,000 per annum, while the Ministry conducts its national review of waste material exchanges.

PROPOSAL 5 - RESEARCH NEEDS

In order to provide sound decisions on B.C.'s solid waste problems, waste managers require accurate information on the extent of the problem and

the options available to manage the problems. But there are several gaps in our knowledge of B.C.'s municipal solid wastes, which the Ministry proposes to fill by undertaking the following studies:

1. For most landfill sites, the true costs of operation, including capital, closure, post-closure and environmental costs, are unknown. A study which would provide estimates of the true costs of landfilling for representative landfill sites is required.
2. A study is needed to estimate the current material components of the municipal waste stream, as separated into residential and commercial/industrial wastes. This study should be repeated every five years to identify any emerging trends in solid waste composition.
3. Also required is a study to develop procedures to estimate the volumes of wastes being disposed of at smaller landfill sites, where the weighing of the wastes is impractical.
4. Consumer product packaging is often cited as a key element in the growth of solid wastes and in their changing composition yet little information on consumer product packaging is available. A study of consumer product packaging as a component of the solid waste stream is therefore essential.
5. Consistent data on the quantity, cost and markets for recyclable materials is not currently available, and the development of a system by which these data can be obtained and updated is needed.

PROPOSAL 6 - ESTABLISH A RECYCLING SECTION

The programs proposed above, if approved, will require Ministry staff to implement and administer. The Ministry proposes to create a Recycling and Solid Waste Management Section within the Waste Management Branch which would have responsibility for these programs and for the other Ministry program proposals outlined in the remainder of this paper. The staff for

the section would not be new positions but rather come from a reallocation of existing Ministry staff positions. The section would be composed of five positions: a manager, a municipal recycling coordinator, a commercial/industrial recycling coordinator, a grant administrator and a clerk. The five positions are the minimum number needed to carry out the proposals outlined in this paper. More staff members may be required, depending on the demands for the section's services.

SECTION 3

PROCUREMENT POLICIES

3.1 INTRODUCTION

Procurement policies are those that support the purchase of products made in whole or in part from recyclable materials -- products such as office paper, tissue paper, rerefined lubricating oils and construction materials containing incinerator ash.

These policies are aimed at encouraging producers to develop and expand markets for these products.

The major argument in support of such a policy is that if government is going to increase the supply of recyclable materials, by providing grants and subsidies, it has an equal duty to increase the demand for recyclable materials. Otherwise, the large increase in supply coupled with a weak demand for the recycled materials could render the existing recycling operations unprofitable. The size of government, it is argued, also allows it to create markets for specific goods where none existed before. Other arguments in favour of government procurement policies state that government purchases can provide stability to the market and yield public information on the quantity, quality and price of the available goods containing recycled materials.

3.2 EXAMPLES OF PROCUREMENT POLICIES IN OTHER JURISDICTIONS

Many jurisdictions either have or are considering implementing procurement policies. The most popular policy by far concerns paper products. Table 3-1 summarizes the paper product procurement policies of 12 U.S. states. The paper content requirement refers to how much recycled paper must be in a paper product in order for the product to qualify under the procurement policy. Secondary paper usually refers to products which are recycled prior to being used such as flawed products or production overruns.

TABLE 3-1
EXAMPLES OF PAPER PROCUREMENT POLICIES IN OTHER JURISDICTIONS

JURISDICTION	<u>PAPER CONTENT REQUIREMENT</u>		PRICE PREFERENCE (%)
	SECONDARY (%)	POST-CONSUMER (%)	
California	50	inc. 10	5
Florida	n.s.	n.s.	0
Illinois	n.s.	50	0
Maryland	80	inc. 80	0
Minnesota	n.s.	n.s.	0
Missouri	n.s.	n.s.	0
New York	40	n.s.	10
Ohio	n.s.	n.s.	0
Oregon	50	or 25	5
Rhode Island	50	inc. 25	5
Washington	n.s.	50	0
Vermont	n.s.	50	0

n.s. - none specified

inc. - including

Source: Vandenberg, 1986

production overruns. Post-consumer paper is paper which has been used for its intended purpose and would otherwise have entered the waste stream. As shown in the table the content requirements vary substantially across jurisdictions. Four of the 12 jurisdictions listed in the table also offer a price preference for paper products which meet the content requirements. A price preference of 5 percent means that if a recycled product is not the lowest bid but comes within 5 percent of the lowest bid then the recycled product will be awarded the contract.

3.3 PROCUREMENT POLICY PROPOSALS

PROPOSAL 7 - A PROCUREMENT POLICY

The Ministry proposes that a provincial procurement policy be introduced to promote the demand for recycled materials. The policy would initially apply only to paper and lubricating oil. The policy for paper products would give first preference to products containing at least 50 percent secondary fibre including 25 percent post-consumer fibre, second preference to products containing more than 1 percent post-consumer fibre, and third preference to products made solely from virgin materials. For lubricating oils, preference would be given to products containing at least 50 percent re-refined oil. The preferences would apply only to those products manufactured in British Columbia. No price preference would be given. The existing return on investment (value added) analysis given to goods made in British Columbia would apply. Other products which contain recycled materials would be added whenever they are proven to be economically feasible.

SECTION 4

BEVERAGE CONTAINER AND LITTER CONTROL

4.1 INTRODUCTION

At their inception in the early 1970s, the purpose of beverage container controls was to curb the accumulations of the persistent components of litter from the proliferation of non-refillable containers in the environment. Pressure on government to invoke regulatory control came from the statement of public concern about aesthetic values and related problems with human and wildlife safety.

Over the years, the ancilliary policy goals adopted for these programs, in addition to litter reduction, have changed significantly. In the first instance, the benefits from energy and resource conservation, for example, were features of many performance assessments on the controls, and currently, the emphases are placed more squarely on the effectiveness of landfill and litter avoidance.

Justifiable argument is made that container-associated litter constitutes only a small portion of the total litter stream. Conversely, however, programs which address the total litter problem commonly do not alleviate the generation of litter nor the diversion of such wastes from landfill. Recycling initiatives, on the other hand, have the potential to reduce disposal requirements but have no direct influence on litter volumes.

The British Columbia Litter Act (1970) was the first container legislation enacted in North America and currently exercises control over 750 million soft drink and beer sales annually. The Act stipulates that a cash refund is payable on the return of a specified container by the purchaser to the seller, having effect at all stages of product distribution. Its purpose is to create an incentive to the consumer not to discard the empty container as either litter or landfill waste. The law has no intent to

address the removal of litter once created, although in practice, refunds are often paid to the casual collectors who are not original purchasers. No requirement exists for any deposits to be charged; the refund is payable from a portion of the purchase price.

4.2 EXAMPLES OF PROGRAMS IN OTHER JURISDICTIONS

Oregon's container law (1971) closely relates to the current enactment in B.C.: it is retail-based, stipulates refunds but not deposits, controls only soft drink and beer-type beverages and is non-restrictive of allowable container designs. The State's philosophy maintains that refunds and curbside collections are compatible and complementary strategies. It believes that the limitation to curbside success is the participation rate which is not influenced by the increased value of collectables.

The deposit law in Alberta (1971), combined with voluntary beer industry deposits, applies to soft drinks, fruit drinks, beer, liquor and wine containers. Manufacturers and distributors are required to fund collection depots through handling charges of 2-3 cents per container and 1 1/2-cent per refillable unit returned to retailers. Considerable government involvement is dedicated to the system operation.

Ontario's Regulation (1985) intermingles requirements on container deposits, recycling and refillables. Refillables carry deposits which are refundable at retail outlets and brand owners are obliged to maintain refillables at 40 percent sales share. Non-refillables must be recycled at a minimum of 50 percent of sales to avoid deposit or total prohibition of the container. In order to satisfy the recycling requirement, the beverage industry funds multi-material collection programs in urban areas and depot facilities in the more rural settings of the province. In 1987, the government laid over 100 charges against producers for illegal market shares of non-refillables.

New York's Returnable Container Law (1983) requires a minimum 5-cent deposit on soft drink and beer containers and a handling fee of 1 1/2-cents per unit payable by the bottler to the retailer. This was the ninth U.S. state to enact container regulations.

California (1987) established a state-wide recycling goal of 80 percent recycling for soft drink and beer containers, prompted by a one cent redemption value at recycling depots established by the major retailers. Redemption values will increase incrementally until recycling targets are hit.

Washington State adopted its Model Litter Control Act in 1971 imposing a litter tax on products "reasonably related to litter". The tax is 0.015 percent of the product value and the revenue is applied to the cost of litter control, recycling and public education programs throughout the state. The tax is levied on products ranging from gum packages to beverage containers.

4.3 BEVERAGE CONTAINERS AND LITTER CONTROL PROGRAM PROPOSALS

The Ministry recognizes that there are two potential options for controlling the disposal of beverage containers - a deposit/refund system or a comprehensive recycling operation coupled with a litter control program. However, the Ministry is aware that the current beverage container refund legislation, though requiring amendments to bring it up to date with existing market conditions, is successful in recovering over 84 percent of all refillable and non-refillable beverage containers. Consequently it prefers to maintain the current container return system, with the modifications proposed below, until there is clear evidence that a recycling and litter control program can be as effective at removing containers from the litter stream across the entire province.

PROPOSAL 8 - LITTER ACT AMENDMENTS

A number of modifications to the current Litter Act are necessary to improve its effectiveness and universality. Consumers should be given the

opportunity to return containers to any retailer who sells the kind, size and brand in question, rather than being obliged to make returns to the place of purchase. There should be provision for returning the same number of containers purchased through one receipted transaction, with prior notification to the retailer, instead of limiting returns to 24 containers per day without exception. In addition, the type of beverage container should be simplified to encompass carbonated beverages only, thereby standardizing the container category to rigid, pressure-resistant types.

PROPOSAL 9 - SOFT-DRINK MANDATORY DEPOSITS

More fundamentally, a mandatory deposit is a practical necessity for the management of soft-drink container returns in a system where the consumer can seek refunds from any retailer selling the same package. The effect is to return the control of refunds to the bottlers or distributors and to greatly simplify the operation and monitoring mechanisms of the system. It also ensures an equal basis of competition among the different bottlers, although the smaller distributors may be disadvantaged by not having the same facility to collect empty containers and reimburse their client retailers.

PROPOSAL 10 - SOFT-DRINK HANDLING FEE

To recognize the role of retailers in the return system and to compensate in part for any revenue loss from foregone deposits available under the current legislation, a handling fee of one cent per container returned to the bottler should be paid to the retailer by the bottler.

PROPOSAL 11 - BEER TYPE CONTAINERS

It is not obvious that the proposed mandatory deposit and handling fee would be needed for the brewing industry because of its more consolidated structure of retailing through a government agency. Accordingly, no changes beyond the simplifying modifications to the Litter Act identified in Proposal 8 would be necessary with respect to the brewing industry.

The expansion of container controls to wines and spirits is not consistent with the thrust to simplify container types (i.e. carbonated drinks) and is considered beyond the purview of this study.

SECTION 5

ENERGY AND RESOURCE RECOVERY

5.1 INTRODUCTION

The proposed recycling programs described in Section 2 were directed at the source separation of recyclable materials prior to the materials entering the waste stream. This section focusses its discussion on the recovery of energy and recyclable materials from the materials that have already entered the municipal waste stream. The recovery of a useful product from mixed municipal wastes is not an easy task due to the wastes' heterogenous composition and the contamination of the materials in the mixed wastes. Energy can be recovered by incinerating the wastes in a boiler unit to produce steam for sale or for the production of electricity. The incineration of wastes can also extend the service life of landfills by a factor of 3 or 4 due to the reduction in the waste volumes. A second energy recovery method is to extract combustible material from the wastes to produce refuse derived fuel (R.D.F.). Material such as metals, glass, plastics and paper, with varying degrees of success, can also be extracted from the waste stream. The magnetic separation of ferrous metals is perhaps the easiest method of material recovery. However, the history of material recovery has been mixed with both spectacular success and failure.

Until recently, the incineration of municipal wastes was considered an environmentally safe method of waste disposal. Combustion technologies had improved, albeit at significant cost increases, so that air emissions were greatly reduced and flue gas scrubbers and other pollution control devices were able to remove the majority of the remaining pollutants. The ash in particular was considered inert and safe for disposal in landfills. However, recent evidence has shown the potential for toxic heavy metal and dioxin concentrations in some incinerator ash. The cause, extent and seriousness of the ash contamination is not clearly understood and there is a great deal of research underway in the U.S. devoted to this problem. It

must be understood that this problem applies to mixed municipal wastes but not necessarily to all waste incineration. Ash contamination is not a problem with the combustion of homogenous wastes such as wood wastes.

5.2 EXAMPLES OF ENERGY AND RESOURCE RECOVERY PROGRAMS IN OTHER JURISDICTIONS

The Ontario Ministry of Energy has budgeted \$25 million for a five-year program covering capital costs of energy from waste projects at 15 percent of costs to a maximum of \$6 million per project. A wide range of wastes can qualify with municipalities eligible for grants, and private sector applicants eligible for either grants or loans. Projects must involve proven design, best available control technology, confirmed energy sales, and a minimum tipping fee of \$30 per tonne. No grant or loan will exceed the equity provided by the proponent. Under another assistance program, Ontario provides grants equal to 1/3 of costs of material recovery and R.D.F. projects.

In 1980, Washington State issued a \$97 million general obligation bond to provide funds to assist municipal and county governments in the construction of new solid waste management facilities. The state grant funds 50 percent of eligible costs, including feasibility, design, administration, comprehensive planning, and construction costs. Only municipalities and counties are eligible for the grants. As of the fall of 1986, all available funds had been committed.

Instead of a grant program, New Jersey has opted for the provision of interest-free-loans with a 23-year payback period. Rhode Island's program was to set up a state-owned corporation which will build and operate three energy-from-waste incinerators. New York State not only provides grants but also requires that utilities buy any electricity produced at energy-from-waste facilities at 6¢ (U.S.) per kilowatt-hour.

5.3 ENERGY AND RESOURCE RECOVERY PROGRAMS PROPOSALS

The Ministry of Energy, Mines and Petroleum Resources has been developing a proposal for a program to assist energy-from-waste projects, similar to the Ontario Ministry of Energy's program. The proposed program is still being developed and will not be finalized before the 1989/90 fiscal year.

PROPOSAL 12 - ENERGY-FROM-WASTE ASSISTANCE

The Ministry of Environment proposes to support the Ministry of Energy, Mines and Petroleum Resources in the development of an energy-from-waste assistance program. Of course the Ministry would only support energy-from-waste projects which met stringent environmental safeguards. Although not explicitly considered in this paper, the forest industries generate large quantities of wood wastes which would be conducive to an energy-from-waste facility. The Ministry will also seek a commitment from the British Columbia Hydro and Power Authority to purchase electricity, from any energy-from-waste project which produces it.

SECTION 6

FUNDING OF PROVINCIAL SOLID WASTE MANAGEMENT PROGRAMS

6.1 INTRODUCTION

In the Ministry's view it is the waste generator who is responsible for the safe disposal of his or her waste products. As such, the revenues necessary to fund the programs proposed in the proceeding sections should ultimately come from waste generators and not from general government revenue. To do otherwise would mean the general public would be subsidizing the waste disposal costs of waste producers. Under these circumstances the waste producers would have no incentive to either reduce or eliminate their waste production nor to find alternative waste disposal methods. The Ministry's view is consistent with the "polluter-pay principle" adopted by all member nations, including Canada, of the Organization for Economic Cooperation and Development (OECD, 1975).

6.2 EXAMPLES OF REVENUE SOURCES USED IN OTHER JURISDICTIONS

Many of the provinces and U.S. states that have implemented municipal solid waste management support programs provide funding from general revenue. As discussed above, the Ministry views this method of funding as inappropriate. However, more and more jurisdictions are adopting revenue mechanisms to recover the funds from the waste generators. For example, New Jersey, Illinois and Minnesota have implemented surcharges on landfill tipping fees in order to raise the necessary revenue. The New Jersey state surcharge currently amounts to \$3.60/ton (U.S. dollars)

Another revenue mechanism is product charges, which are defined as an excise tax on the material content of consumer products entering the waste stream. The concept is that the end users of a product should have included in it the cost of collecting and disposing of the discarded product and associated packaging materials. Product charges are usually used for goods

usually used for goods which pose particularly difficult disposal problems. Automobile and truck tires are a case in point. Tires when landfilled tend to float up through the landfill and discarded tires stockpiled on the surface collect pools of water which serve as a breeding ground for insects. Some jurisdictions have implemented surcharges on the sale of tires to assist in the added cost of their disposal. Oregon, for example, has implemented a \$1 surcharge on the sale of replacement tires. Another example of a product charge comes from West Germany which imposes a surcharge on the sale of lubricating oil and uses the funds to collect and dispose of the discarded oil (see OECD, 1980).

Other jurisdictions have or are moving toward including a wider group of products. For example, in 1971 Washington State passed the Model Litter Control Act which contained provisions for a litter tax on items manufactured or sold in the state which contributed to the litter stream. The tax is 0.15 of 1 percent of the value of the item sold. The tax is assessed on industries "... whose products, including the packages, wrappings and containers thereof, are reasonably related to the litter problem" (section 70.93.130 of the Act). Industries included under this provision includes: packaging, beverage, food and grocery, drug, newspaper and magazine industries. In 1977 the litter tax raised \$1.2 million which was directed at programs to reduce the litter problem. Other states such as New York and Florida propose to introduce a "waste initiator's tax" which would be based on the material content and recyclability of non-food packaging.

6.3 PROPOSALS FOR REVENUE GENERATION

PROPOSAL 13 - PROVINCIAL LANDFILL SURCHARGE

The Ministry proposes to implement a provincial landfill tipping fee surcharge in the range of \$1 to \$3 per tonne. For landfill sites which do not measure their wastes, the tipping fee would be based on the maximum permitted daily discharge rate. The revenues derived from the surcharge

would only be used to fund the solid waste management support programs proposed in the previous sections. It is expected that the proposed surcharge depending on the fee selected would raise between \$1.5 to \$6.6 million annually.

For municipalities or regional districts that have already established a program for recycling or reducing wastes which meets the objectives of the provincial solid waste management strategy, there would be some credit from this tipping fee. The precise mechanism for charging provincial tipping fees will be a major topic of consultation with municipalities and regional district before a new policy is finalized. The Ministry is concerned that sufficient revenues be generated from this surcharge to fund the solid waste management support programs outlined in the previous sections. It is anticipated that the costs of a province-wide strategy required to reduce solid waste disposal to landfills by 25 percent over the next five years would be \$8 - \$12 million. This would require an average tipping fee surcharge of approximately \$2 per tonne.

PROPOSAL 14 - PRODUCT DISPOSAL CHARGES

The Ministry believes that the use of product charges is justified for products which present particularly difficult disposal problems. The Ministry proposes to study which products present such a disposal problem and implement an appropriate surcharge. Potential candidates for a surcharge include automobile and truck tires and batteries. The revenues generated would be used to assist municipalities in the disposal of the problem products.

Funding Limits

The amount of funding available in any given year for the proposed solid waste management assistance programs would be limited to the revenues expected to be raised by the landfill surcharge and any product charges levied. Where insufficient funds are available to cover all assistance applications, the Ministry would rank the applications by the severity of

the local waste management problem, and fund applicants in descending order of priority until the funding limit has been reached. Any surplus funds would be continually carried over to the next year and made available for use.

PROPOSAL 15 - MUNICIPAL USER FEES

The purpose of the proposed landfill tipping fee surcharge and product charges, aside from raising revenue to fund the proposed assistance programs, is to provide an ongoing incentive for waste generators to reduce or eliminate their wastes. However, the modest tipping fee surcharge proposed is unlikely to have a great impact on waste production. A more powerful incentive would be provided if municipalities fully charge back to the waste producers the full cost of providing waste collection and disposal services. To assist in this regard, the Ministry has already proposed a study to determine the true costs of landfilling at representative landfill sites. The first step would be for landfill operators to implement a tipping fee based on the true cost of landfilling. The second step would be for those municipalities that provide collection services, to fully charge back the cost of waste collection and disposal. To assist municipalities in this second step, the Ministry proposes to undertake a study of the methods used to charge for waste collection services that are based on the cost of collection. For example, in areas of Seattle Washington a variable rate is used, with the charge being based on the number of garbage cans collected from the households.

SECTION 7
PUBLIC INPUT

Management of solid wastes involves everyone. Because everyone is part of the problem, everyone should be part of the solution. Thus the Ministry is anxious to discuss these proposals fully with a wide array of public interests in municipal and regional government, industrial associations, public interest groups and the news media before any final decisions are taken.

This discussion paper will be circulated widely across the province to all of these interests. The Ministry is prepared to meet with groups and individuals to hear their ideas on the proposals outlined in the paper. If you wish to arrange a meeting to discuss this paper, please contact Mr. David Douglas (Waste Management Branch, Ministry of Environment) at 387-9970 or through Facsimile 387-5669.

The public meeting schedule for the solid waste management task force chaired by MLA James Rabbitt will be announced shortly by the Minister of Environment.

To ensure that the Ministry's development of a solid waste management strategy is guided by your response to this discussion paper, please provide your comments, in writing, by October 31, 1988.

Address them to: Solid Waste Management Strategy
Waste Management Branch
Ministry of Environment
Parliament Buildings
Victoria, B.C. V8V 1X5

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